

APPENDIX IV

LAND USE/LAND COVER	AREAS IN HUC-11 SUBWATERSHEDS (ACRES)						
	030	040	050	060	070	080	090
Deciduous Forest	22,033	14,854	6,501	9,115	19,970	23,760	18,777
Emergent Herbaceous Wetlands	33	4	2	0	23	4	
Evergreen Forest	7,404	2,937	3,465	4,928	7,472	5,636	4,713
High Intensity:							
Commercial/Industrial	7	155	266	22	92	842	60
High Intensity: Residential		2	90	1	4	337	7
Low Intensity: Residential	43	69	562	42	188	3,458	782
Mixed Forest	12,336	4,597	3,966	9,248	13,314	7,203	10,369
Open Water	1,906	7	3	1	4,008	224	3
Other Grasses: Urban/Recreational	3	26	166	20	46	419	155
Pasture/Hay	4,756	2,243	3,101	3,129	1,061	4,995	2,178
Row Crops	1,426	828	710	406	207	1,552	573
Transitional	165				283	24	44
Quarries/Strip Mines		65					
Woody Wetlands	36	4	8	19	129	60	9
Bare Rock, Sand, Clay	24	11	15	50	20	90	10
Total	50,172	25,803	18,856	26,983	46,816	48,575	37,680

LAND USE/LAND COVER	AREAS IN HUC-11 SUBWATERSHEDS (ACRES)					
	100	110	120	130	140	150
Deciduous Forest	22,558	10,709	6,937	5,713	10,051	11,664
Emergent Herbaceous Wetlands	6	1			2	62
Evergreen Forest	7,017	3,850	3,538	2,170	4,192	6,038
High Intensity:						
Commercial/Industrial	68	11	65	1,486	346	1,410
High Intensity: Residential	19	3	26	977	66	543
Low Intensity: Residential	456	234	260	3,954	1,382	3,634
Mixed Forest	10,225	5,578	5,436	2,144	5,015	5,339
Open Water	69	8	8	12	7	1,477
Other Grasses: Urban/Recreational	77	97	16	705	150	876
Pasture/Hay	1,181	480	161	1,752	3,214	13,307
Row Crops	286	69	80	348	379	1,441
Transitional	314	1	283		13	
Woody Wetlands	25	7	4	26	28	128
Bare Rock, Sand, Clay	21	5	2	57	34	258
Total	42,324	21,052	16,816	19,343	24,915	46,219

Table A4-1. Land Use Distribution in Watauga River Watershed by HUC-11. Data are from 1992 Multi-Resolution Land Characterization (MRLC) derived by applying a generalized Anderson Level II system to mosaics of Landsat thematic mapper images collected every five years.

HYDROLOGIC SOIL GROUPS

GROUP A SOILS have low runoff potential and high infiltration rates even when wet. They consist chiefly of sand and gravel and are well to excessively drained.

GROUP B SOILS have moderate infiltration rates when wet and consist chiefly of soils that are moderately deep to deep, moderately to well drained, and moderately coarse to coarse textures.

GROUP C SOILS have low infiltration rates when wet and consist chiefly of soils having a layer that impedes downward movement of water with moderately fine to fine texture.

GROUP D SOILS have high runoff potential, very low infiltration rates, and consist chiefly of clay soils.

Table A4-2. Hydrologic Soil Groups in Tennessee as Described in WCS.

STATION	HUC-11	NAME	AREA (SQ. MILES)	PERIOD OF OBSERVATIONS	FLOW (CFS)		
					Min	Max	Mean
03482500	06010103030	Roan Creek at Butler	166.0	06/01/34-09/30/48	23.0	3,390.0	165.0
03482000	06010103030	Roan Creek Near Neva	102.0	06/01/42-06/30/55	6.0	2,410.0	104.0
03480000	06010103030	Watauga River	171.0	11/01/27-09/30/45	28.0	14,800.0	290.0
03479500	06010103030	Watauga River at TN-NC State Line	152.0	10/01/42-06/30/55	12.0	5,580.0	256.0
03481600	06010103050	Corn Creek at Mountain City	5.34		0.11		
03483000	06010103070	Watauga River	427.0	08/31/00-09/30/48	85.0	31,400.0	692.0
03485500	06010103080	Doe River at Elizabethton	137.0	10/01/11-03/31/82	17.0	5,340.0	223.0
03486000	06010103080	Watauga River at Elizabethton	692.0	03/01/26-02/28/82	85.0	28,400.0	1,085.0
03484000	06010103080		471.0	05/11/03-02/28/82	2.0	10,100.0	741.0
03486200	06010103140		28.1	10/09/64-09/30/70	3.0	921.0	26.0

Table A4-3. Historical USGS Streamflow Data Summary Based on Mean Daily Flows in Watauga River Watershed. Min, absolute minimum flow for period of record.

PARAMETER ID	PARAMETER NAME
00010	Water Temperature (Degrees Centigrade)
00060	Flow, Stream, Mean Daily (cfs)
00061	Flow, Stream, Instantaneous (cfs)
00065	Stream Stage (Feet)
00078	Transparency, Secchi Disc (Meters)
00080	Color (Platinum-Cobalt Units)
00094	Specific Conductance, Field ($\mu\text{mhos/cm}$ @ 25° C)
00095	Specific Conductance, Field ($\mu\text{mhos/cm}$ @ 25° C)
00299	Oxygen, Dissolved, Analysis by Probe (mg/L)
00300	Oxygen, Dissolved (mg/L)
00310	BOD 5 Day @ 20° C (mg/L)
00335	COD (Low Level) in .025 N $\text{K}_2\text{Cr}_2\text{O}_7$ (mg/L)
00340	COD (High Level) in .025 N $\text{K}_2\text{Cr}_2\text{O}_7$ (mg/L)
00400	pH (Standard Units)
00410	Alkalinity, Total (mg/L as CaCO_3)
00431	Alkalinity, Total Field (mg/L as CaCO_3)
00515	Residue, Total Filtrable (mg/L)
00530	Residue, Total Nonfiltrable (mg/L)
00605	Nitrogen, Organic, Total (mg/L as N)
00608	Nitrogen Ammonia, Dissolved (mg/L as N)
00610	Nitrogen Ammonia, Total (mg/L as N)
00613	Nitrite Nitrogen, Dissolved (mg/L as N)
00619	Ammonia, Unionized (Calculated From Temp-pH- NH_4 ; mg/L)
00620	Nitrate Nitrogen, Total (mg/L as N)
00623	Nitrogen, Kjeldahl, Dissolved (mg/L as N)
00625	Nitrogen, Kjeldahl, Total (mg/L as N)
00630	Nitrite Plus Nitrate, Total (1 Determination mg/L as N)
00631	Nitrite Plus Nitrate, Dissolved (1 Determination mg/L as N)
00665	Phosphorus, Total (mg/L as P)
00666	Phosphorus, Dissolved (mg/L as P)
00671	Phosphorus, Dissolved Orthophosphate (mg/L as P)
00680	Carbon, Total Organic (mg/L as C)
00900	Hardness, Total (mg/L as CaCO_3)
00915	Calcium, Dissolved (mg/L as Ca)
00916	Calcium, Total (mg/L as Ca)
00925	Magnesium, Dissolved (mg/L as Mg)
00927	Magnesium, Total (mg/L as Mg)
00929	Sodium, Total (mg/L as Na)
00930	Sodium, Dissolved (mg/L as Na)
00935	Potassium, Dissolved (mg/L as K)
00937	Potassium, Total (mg/L as K)
00940	Chloride, Total In Water (mg/L)
00941	Chloride, Dissolved in Water (mg/L)
00945	Sulfate, Total (mg/L as SO_4)
00946	Sulfate, Dissolved (mg/L as SO_4)
00950	Fluoride, Dissolved (mg/L as F)
00955	Silica, Dissolved (mg/L as SiO_2)
01002	Arsenic, Total ($\mu\text{g/L}$ as As)
01007	Barium, Total ($\mu\text{g/L}$ as Ba)
01025	Cadmium, Dissolved ($\mu\text{g/L}$ as Cd)
01027	Cadmium, Total ($\mu\text{g/L}$ as Cd)
01034	Chromium, Total ($\mu\text{g/L}$ as Cr)
01040	Copper, Dissolved ($\mu\text{g/L}$ as Cu)

01042	Copper, Total (µg/L as Cu)
01045	Iron, Total (µg/L as Fe)
01046	Iron, Dissolved (µg/L as Fe)
01049	Lead, Dissolved (µg/L as Pb)
01051	Lead, Total (µg/L as Pb)
01065	Nickel, Dissolved (µg/L as Ni)
01067	Nickel, Total (µg/L as Ni)
01075	Silver Dissolved (µg/L as Ag)
01077	Silver Total (µg/L as Ag)
01090	Zinc, Dissolved (µg/L as Zn)
01092	Zinc, Total (µg/L as Zn)
01105	Aluminum, Total (µl as Al)
01106	Aluminum, Dissolved (µl as Al)
01147	Selenium, Total (µl as Se)
31613	Fecal Coliform (Membrane Filter, M-FC Agar at 44.5° C, 24 h)
31616	Fecal Coliform (Membrane Filter, M-FC Broth at 44.5° C)
31625	Fecal Coliform (Membrane Filter, M-FC, 0.7 UM)
31673	Fecal Streptococci, (Membrane Filter, KF Agar, at 35° C, 48h)
32211	Chlorophyll-A, Spectrophotometric, Acid, Corrected (µg/L)
39086	Alkalinity, Water, Dissolved, Field Titration (mg/l as CaCO ₃)
70300	Residue, Total Filtable (Dried at 180°C, as mg/L)
70507	Phosphorus, in Total Orthophosphate (mg/L as P)
71845	Nitrogen, Ammonia, Total (mg/L as NH ₄)
71890	Mercury, Dissolved (µg/L as Hg)
71900	Mercury, Total (µg/L as Hg)
80154	Suspended Sediment (Evaporation at 110°C, as mg/L)
82078	Turbidity, Field (as Nephelometric Turbidity Units, NTU)
82079	Turbidity, Lab (as Nephelometric Turbidity Units, NTU)

Table A4-4a. Water Quality Parameters and Codes.

PARAMETER ID	SUBWATERSHED							
	030	040	050	070	080	100	120	150
00010	b,d	e	f	g,h,k	n,o,p,q,r,s,t,u,v,w	y	z	%,@,&
00060				k				
00061	d				o,p,r,s,t			%
00078				g,k				@
00080	b			h		y	z	
00094		e	f	g,h,k	n,p,q,u,v,w	y	z	%,&
00095								%,&
00300	b,d	e	f	g,h,k	n,o,p,q,r,s,t,u,v,w	y	z	%,@,&
00310								&
00335	b	e	f		n,q,v,w			&
00400	b	e	f	g,h,k,m	n,p,q,u,v,w	x,y	z	%,@
00410				h	u	y	z	&
00515	b	e	f	h	n,q,v,w	y	z	&
00530	b	e	f	h	n,q,u,v,w	y	z	&
00605				g,k				@,&
00608								%
00610	b	e	f	g,h,k	n,q,u,v,w	y	z	@,&
00613								%
00619	b	e	f	g,h,k	n,q,u,v,w	y	z	%,@
00623								%
00625								%
00630	b	e	f	g,h,k	n,q,u,v,w	y	z	@,&
00631								%
00665	b	e	f	g,h,k	n,v,u,w	y	z	%,@,&
00666								%
00671				g,k				%,@
00680				g,k				@
00900	b	e	f	h	n,q,u,v,w	y	z	&
00927								&
00940				h			z	&
00945				h			z	&
01002	b	e	f	h	n,q,u,v,w	y	z	&
01027	b	e	f	h	n,q,u,v,w	y	z	&
01034	b	e	f	h	n,q,u,v,w	y	z	&
01042	b	e	f	h	n,q,u,v,w	y	z	&
01045				h		y	z	&
01051	b	e	f	h	n,q,u,v,w	y	z	&
01067	b	e	f	h	n,q,u,v,w		z	&
01092	b	e	f	h	n,q,u,v,w	y	z	&
01105								&
01147								&
31616	a,b,c	e	f	h,i,j,l,m	n,q,u,v,w	x,y	z	%,+,&
32211				g,k				@
39086								%
71900	b	e	f	h	n,q,u,v,w		z	&
80154								%
82078				g	o,r,s,t			@

Table A4-4b. Water Quality Parameters Monitored in Watauga River Watershed.

CODE	STATION	ALIAS	AGENCY	LOCATION
a	477260		TVA	Watauga Reservoir
b	ROAN016.5	ROAN016.4JO	TDEC	Roane Creek at Maymead Farm
c	477585		TVA	Watauga Reservoir
d	475578		TVA	Watauga Reservoir
e	ROAN018.2	ROAN017.9JO	TDEC	Roane Creek at Bridge
f	TOWN00.9		TDEC	Town Creek at Bridge
g	477513		TVA	Watauga Reservoir
h	ECO66d01		TDEC	Black Branch @ RM 2.0
i	477583		TVA	Watauga Reservoir @ Shook Branch
j	477584		TVA	Watauga Reservoir @ Watauga Point
K	475576		TVA	Watauga Reservoir
L	477586		TVA	Watauga Reservoir @ Lakeshore Dock
m	040627		USFS	Shook Branch Swimming Area
N	WATAUGA026.9	WATAU026.9CT	TDEC	Watauga River @ RM 26.9
O	475528		TVA	Watauga Powerhouse
P	476498C		TVA	Watauga Tailrace
Q	DOE01.1	DOE001.1CT	TDEC	Doe River @ Hwy 19E Bridge (Elizabethton)
R	477102		TVA	Wilbur Dam Tailrace
S	476498		TVA	Watauga Tailrace
T	475557		TVA	Wilbur Dam
U	003750	WATAU015.3WN	TDEC	Watauga River
V	WATAUGA020.1	WATAU020.1CT	TDEC	Watauga River @ RM 20.1
W	WATAUGA025.1	WATAU025.1CT	TDEC	Watauga River @ RM 25.1
X	040622		USFS	Watauga Point Number 2
y	ECO66d05		TDEC	Doe River @ RM 26.0
z	ECO66d03		TDEC	Laurel Fork Creek @ RM 6.5
#	03486665		USGS	Knob Creek @ Wayfield Drive
%	03486667		USGS	Knob Creek @ Austin Springs
&	BRUSH00.7	BRUSH000.8WN	TDEC	Watauga Road Bridge (Johnson City)
\$	476529		TVA	Boone Reservoir at Pickens Bridge
+	477589		TVA	Boone Reservoir @ Jay's Boat Dock
@	477511		TVA	Boone Reservoir Above Pickens Bend

Table A4-4c. Water Quality Monitoring Stations in Watauga River Watershed. TDEC, Tennessee Department of Environment and Conservation; TVA, Tennessee Valley Authority; USFS, United States Forest Service; USGS, United States Geological Survey.

FACILITY NUMBER	FACILITY NAME	SIC	SIC NAME	MADI	WATERBODY	SUBWATERSHED
TN0074641	Maymead Shop	2951	Asphalt Paving Mixtures	Minor	Roan Creek @ RM 15.6	06010103030
TN0024945	Mountain City STP	4952	Sewerage Systems	Minor	Town Creek @ RM 0.4	06010103050
TN0060381	Alumax Extrusions	3354	Aluminum Extruded Poroducts	Minor	Doe River @ RM 2.6	06010103080
TN0023515	Elizabethton STP	4952	Sewereage Systems	Major	Watauga River @ RM 24.3	06010103080
TN0059781	ColorWorks, Inc.	2262	Broadwoven Fabric Finisher	Minor	Watauga River @ RM 28.2	06010103080
TN0004421	North American Rayon	2823	Cellulosic Manmade Fibers	Major	Watauga River @ RM 24.0-25.0 (Various Points)	06010103080
TN0023736	Keensburg ES	4952	Sewerage Systems	Minor	0.24 Mi of Trib to Campbell Creek @ RM 1.7	06010103080
TN0024244	Brush Creek STP	4952	Sewerage Systems	Major	Watauga River @ RM 16.4	06010103080
TN0027553	TVA Wilbur Hydro Plant	4911	Electric Services	Minor	Watauga River @ RM 34.0	06010103080
TN0027545	TVA Watauga Hydro Plant	4911	Electric Services	Minor	Watauga River @ RM 35.8	06010103080
TN0056405	Valley Forge ES	4952	Sewerage Systems	Minor	Doe River @ RM 3.9	06010103080
TN0056405	Valley Forge ES	4952	Sewerage Systems	Minor	Doe River @ RM 3.9	06010103080
TN0073610	Bill Morgan Farm Groundwater Remediation			Minor	Trib to Ripshin Lake	06010103100
TN0023680	Cloudland School	4952	Sewerage Systems	Minor	Buck Creek @ RM 0.2	06010103100
TN0073679	Roan Highlands Nursing Center	4952	Sewerage Systems	Minor	Buck Creek @ RM 2.3	06010103100
TN0074357	Roan Mountain State Park	4952	Sewerage Systems	Minor	Doe River @ RM 24.5	06010103100
TN0061531	Carter County Work Camp	4952	Sewerage Systems	Minor	Doe River @ RM 18.0	06010103100
TN0023701	Hampton HS	4952	Sewerage Systems	Minor	Doe River @ RM 7.6	06010103100

TN0023698	Hampton ES	4952	Sewerage Systems	Minor	Laurel Fork @ RM 0.5	06010103120
TN0075094	Hampton Carter Commercial Center	4952	Sewerage Systems	Minor	Laurel Fork Creek @ RM 0.1	06010103120
TN0002500	Bosch Braking Systems	3714	Motor Vehicle Parts and Accessories	Minor	Sinking Creek @ RM 3.1	06010103130
TN0054950	Buffalo Mtn Resort	4952	Sewerage Systems	Minor	Buffalo Creek @ RM 7.9	06010103140
TN0024236	Knob Creek STP	4952	Sewerage Systems	Major	Watauga River @ RM 11.0	06010103150

Table A4-5. Active Permitted Point Source Facilities in the Watauga River Watershed. SIC,
Standard Industrial Classification; MADI, Major Discharge Indicator.

FACILITY NUMBER	FACILITY NAME	SIC	SIC NAME	WATERBODY	HUC-11
TN0071625	Butler Stone & Gravel: Cook Hollow Quarry	1429	Crushed and Broken Stone, NEC	Tributary to Doe Creek	06010103030
TN0071315	S & S Paving: Site # 1	1422	Crushed and Broken Limestone	Unnamed Drainway to Roan Creek	06010103030
TN0066206	Maymead, Inc.: Potter Quarry	1423	Crushed and Broken Granite	Roaring Creek Forge Creek	06010103040
TN0066192	Maymead, Inc.: 421 Plant	1423	Crushed and Broken Granite	Roan Creek	06010103040
TN0071463	Mountain City Stone	1423	Crushed and Broken Granite	Goose Creek	06010103050
TN0071277	Doe Creek Quarry	1429	Crushed and Broken Stone, NEC	Doe Creek	06010103060
TN0068977	American Limestone Co.: Elizabethton Quarry	1442	Construction Sand and Gravel	Davis Branch	06010103080
TN0066401	General Shale Products: Mine #18-Bowery	1459	Clay, Ceramics, and Refractory Minerals, NEC	Watauga River	06010103080
TN0001775	Watauga Quarry	1422	Crushed and Broken Limestone	Watauga River	06010103080
TN0071412	General Shale Products: Mine #17-Sluder Hollow	1459	Clay, Ceramics, and refractory Minerals, NEC	Trib to Brush Creek	06010103130
TN0071404	General Shale Products: Mine #2-Tannery Knob	1459	Clay, Ceramics, and refractory Minerals, NEC	Brush Creek	06010103130
TN0061069	American Limestone Co.: Unicoi Quarry	1422	Crushed and Broken Limestone	Unnamed Drainway to Buffalo Creek	06010103140
TN0071471	General Shale Products: Mine #19-Cash Hollow	1459	Clay, Ceramics, and Refractory Minerals, NEC	Trib to Knob Creek	06010103150

Table A4-6. Active Mining Sites in the Watauga River Watershed. SIC, Standard Industrial Classification.

LOG NUMBER	COUNTY	DESCRIPTION	WATERBODY	HUC-11
98.496	Carter	Water Intake Construction	Watauga River	06010103080
99.365	Carter	Stream Relocation	Gap Creek	06010103080
98.151	Carter	Stream Relocation	Liberty Branch	06010103090
99.325	Carter	Box Culvert	Weaver Branch Wetland	06010103090
99.325A	Carter	Box Culvert and Channel Relocation	Stoney Creek Tributary	06010103090
99.325B	Carter	Channel Relocation	Stoney Creek Tributary	06010103090
99.325C	Carter	Slab Culvert and Channel Relocation	Laurel Branch	06010103090
99.325D	Carter	Box Culvert and Channel Relocation	Stoney Creek Tributary	06010103090
99.325E	Carter	Box Culvert		06010103090
99.325F	Carter	Spring Drain		06010103090
99.325G	Carter	Box Culvert		06010103090
99.325H	Carter	Box Culvert		06010103090
99.325I	Carter	Slab Culvert		06010103090
99.325J	Carter	Spring-Drain		06010103090
99.325K	Carter	Concrete Pipe		06010103090
99.325L	Carter	Box Culvert		06010103090
99.325M	Carter	Slab Culvert		06010103090
99.325N	Carter	Box Culvert		06010103090
99.325O	Carter	Box Culvert		06010103090
99.325P	Carter	Box Culvert		06010103090
99.325Q	Carter	Slab Culvert		06010103090
99.325R	Carter	Concrete Pipe		06010103090
99.325S	Carter	Box Culvert		06010103090
99.325T	Carter	Gabion Wall		06010103090
97.818	Carter	Slide Repair and Stream Relocation	Blue Creek	06010103100
98.278	Carter	Removal of Point Bars	Buck Creek	06010103100
99.116	Carter	Bridge Replacement	Watauga River @ RM 1.72	06010103100
98.013	Carter	Box Culvert repair	Powder Branch	06010103140
98.375	MultiCounty			06010103140
99.050	Washington	Box Culvert	Ford Creek	06010103140
98.150	Washington	Rip Rap	Boones Creek	06010103150
98.234	Washington	Stream Relocation	Carroll Creek	06010103150
98.355	Washington	Stream Impoundment	Boones Creek Tributaries	06010103150
98.372	Washington	Stream Relocation	Knob Creek Tributary	06010103150
98.569	Washington	Wetland Alteration	Carroll Creek Tributary	06010103150
99.381	Washington	Wetland Alteration	Wetland Fill in Subdivision	06010103150

Table A4-7. Individual ARAP Permits Issued January 1994 Through June 2000 in Watauga River Watershed.